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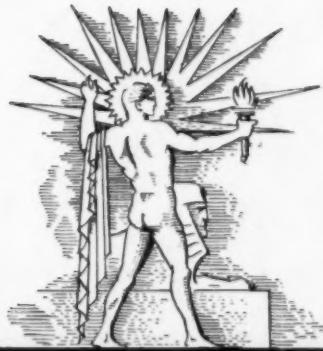
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D T R O

SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE•



March 23, 1940

"Aging" Test

See Page 190.

A SCIENCE SERVICE PUBLICATION

Do You Know?

Carillon bells weigh from 10 pounds to 10 tons.

Theodore Roosevelt, commenting on soil conservation, once said: "When the topsoil goes, man goes."

A fox's tail is important in cold weather—it *blankets* the nose and foot pads when the fox is lying down.

Aqueducts 100 miles or more in length are planned by the Italian government to bring water to the Libyan Desert in North Africa.

British chemists are improving gas-proof paints, which must not be affected by mustard gas and must withstand de-contaminating processes following gas attack.

Watching Maori natives going through a war dance, in New Zealand, Dr. W. K. Gregory of the American Museum of Natural History detected in the tunes traces of Moody and Sankey hymns taught by early missionaries.

Sea level is not absolutely level: a geologist explains that along a mountainous coast, for example, gravitation attraction of the high masses pulls sea level a good deal higher than along a lowland coast.

Field crews working to eradicate the Dutch elm disease have orders from the U. S. Bureau of Entomology and Plant Quarantine to sterilize boots and shoes before entering property where livestock is kept.

SCIENCE NEWS LETTER

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QUESTIONS DISCUSSED IN THIS ISSUE

Most articles which appear in SCIENCE NEWS LETTER are based on communications to Science Service, or on papers before meetings. Where published sources are used they are referred to in the article.

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POPULATION

To what extent are the Finns adding to the world's mass migration problem? p. 184.

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Who have criticized political attacks on the Census? p. 183.

PSYCHOLOGY

Will a young baby make swimming movements if dropped into deep water? p. 184.

New surgical sponges are lintless.

Eggs freeze at 28 degrees above zero.

A fish's bones need not be so strong as those of a land animal—water surrounding the fish serves as support.

Polish refugee professors have established a Polish University Abroad in Paris to keep alive Poland's science and learning.

A Polish scientist, an authority on solar radiation, will study sunshine and cloudiness in southern California, comparing it with Mediterranean coast resorts.

Over half a million pounds of camphor are used in a year in motion picture film.

Tests of operating an automobile in congested city traffic demonstrate that the cost is about as high as when driving in mud.

Scientists in Iceland are studying herring oil, which may prove useful as a drying oil in paints, also in soap making, and possibly for human food.

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MEDICINE

Dangerous Bleeding Stopped By New Thrombin Preparation

Preparation Induces Life-Saving Clotting in One Second; Supply Still Limited, But Tests Give Encouraging Results

BLEEDERS, from new-born babies to patients on the operating table and even, in many cases, hemophiliacs suffering from the hereditary bleeding disease, can now be saved by two death-defeating substances presented by Dr. H. P. Smith, State University of Iowa, at the meeting of the Federation of American Societies for Experimental Biology in New Orleans.

One of the anti-bleeding substances is a new preparation so powerful that when sprinkled on a wound it stops bleeding by clotting the blood "in the twinkling of an eye." It is obtained from beef blood at the slaughter house which, after preliminary treatment, is whirled in apparatus like a cream separator. The fluid that separates out, called blood plasma, is diluted with water, treated with acid and other chemicals to purify it and finally sterilized by filtering through cakes of ground glass partially fused together.

This material is so fast in action it will clot blood in one second. It is not yet on the market and the supply is still limited but surgeons at the University of Iowa have already used it, with "quite encouraging" results, to stop dangerous oozing of blood during major operations. This oozing, which is difficult if not impossible to stop by other methods, is especially troublesome in operations on the brain, liver and bone.

Thrombin May Save Lives

When the material is available generally, dentists will also be able to use it to stop bleeding after teeth are drawn. For hemophiliacs, like the Spanish Count of Cavodonga, who recently bled to death from injuries following an automobile accident, the new thrombin may prove life-saving. It cannot stop the internal bleeding, but in many cases hemophiliacs bleed to death from cuts on the surface of their bodies. This bleeding can be stopped by the new thrombin.

Thousands of new-born babies and older patients suffering from obstructive jaundice can be saved from bleeding to death by the other substance Dr. Smith discussed, vitamin K. This vitamin not

only stops bleeding but if used properly will prevent the bleeding, Dr. Smith emphasized.

The vitamin was discovered by Prof. H. Dam of Copenhagen. Its chemical identity was determined and it was prepared synthetically by scientists at the St. Louis University and the University of California. It was first used to treat patients by Dr. Smith and by doctors at the Mayo Clinic.

A "bedside" test for determining when to use vitamin K to prevent bleeding was described by Dr. Smith. He urged doctors to use this test on patients who might bleed, so that the vitamin can be given in time to prevent the bleeding. For new-born babies, one out of every two or three hundred of whom are in danger of bleeding, vitamin K can be given during the first few days of life. The second to the fourth days are the

danger periods for these babies. Doctors at Johns Hopkins Hospital in Baltimore, in Virginia and in New York, Dr. Smith said, are giving the vitamin to the mothers before the babies are born, to prevent the bleeding in the babies.

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BIOCHEMISTRY

Starch Synthesized in Test Tube for First Time

STARCH has now been synthetically produced from glucose under laboratory conditions, thus paralleling one of the most important food-forming processes of nature. This "foot in the door" of one of the plant world's hitherto most difficult secrets was accomplished by Dr. Charles S. Hanes of the Low Temperature Research Station at Cambridge, England (*Nature*, March 2).

The feat of synthesizing starch could be accomplished, to be sure, only through the aid of a naturally produced enzyme extracted from plants, known as phosphorylase. Dr. Hanes found it in many parts of many plants, but for purposes of his researches extracted it principally from potatoes.

In contact with a form of glucose containing phosphorus, phosphorylase builds the smaller molecules of the sugar into the larger molecules of starch, at the



EYES IN THE AIR

Not long ago guests in a comfortable air transport plane saw, by television, that same plane glide in for a landing at La Guardia Field, New York, as it appeared to a television camera on the ground. Now the eye of television has taken to the air. Light weight cameras and equipment, hefty as about a dozen people, perfected by RCA engineers, installed in a United Air Lines laboratory ship, saw a companion plane (right) and little old Manhattan from a couple of thousand feet up. It gave groundlings before television sets the thrill of flying by proxy. This frees television from being bound to the earth's surface and previews the day when telereceivers will act as the eyes of the world in the air as on land and sea. It suggests that a general, safe at GHQ, will see behind the enemy's lines if a warring world continues to use science for destructive purposes. At the left is the television camera "looking" from the airplane.

same time splitting off phosphorus. The starch aggregates into definite grains, just as it does under natural conditions in the food-making cells of green plants. The grains turn blue when treated with iodine, and show all other normal reactions to the usual tests for starch. Moreover, they can be broken down into glucose again, by appropriate chemical treatment.

Long ago, man learned to take starch and break it down into glucose by heating it with a dilute acid. This process is carried on in industrial plants, by thousands of tons. But not until now has

man succeeded in imitating the reverse process, glucose-into-starch, that in nature apparently always precedes the starch-into-glucose step by which stored starch becomes available for transport or use within the plant body.

Thus far, the work at the laboratory has been attended with extreme technical difficulties, so that very little of the new synthetic starch has been accumulated. The total stock on hand is only about 20 grams—two-thirds of an ounce. But it weighs myriad-fold more in terms of scientific conquest.

Science News Letter, March 23, 1940

hookworm were so anemic they had only from about one-fifth to one-half the normal amount of red coloring matter in their blood.

When iron was given to children with hookworm, most of the symptoms, such as pallor, marked weakness, excessive fatigue, loss of appetite and edema gradually disappeared, even when the hookworm infection remained. On the other hand, clearing up the hookworm infection did not improve the quality of the blood.

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PHYSIOLOGY—MEDICINE

Anemia in Children Blamed On Iron Deficiency in Soil

Nutrition, Cancer Control and Other Problems of Health Discussed as Two Leading Societies Meet at New Orleans

FARM children in Florida, and other regions as well, are in danger of severe nutritional anemia if they live on home-grown food from poor soil that is deficient in iron. Such anemia is not primarily due to hookworm disease as previously believed, Dr. Ouida Davis Abbott, of the Florida Agricultural Experiment Station at Gainesville, Fla., told members of the American Institute of Nutrition.

Hookworm infection affects the degree of anemia, but the prevalence of anemia among rural children in Florida is due primarily to diets low in iron, Dr. Abbott stated.

Anemia of children is so widespread, Dr. Abbott pointed out, that it has been called omnipresent, "the ubiquitous nutritional disease." From Nova Scotia, Massachusetts, North and South Carolina and Georgia as well as Florida have come reports of deficient soils and mineral deficiency diseases of cattle. Plants grown on such soils are lacking in iron and other blood-forming minerals. Both vegetables and meat from such regions, therefore, would be so low in iron that even children living on good diets would be anemic if the diets were composed of home-grown foods.

Anemia was discovered in from 52% to 96% of rural children in Florida living in regions where the soil was predominantly deficient as shown by prevalence of salt sick of cattle. This age-old disease of cattle is known to occur

when the animals are restricted to forages grown on certain white and gray sands and residual mucks known to be lacking in iron, copper, cobalt and perhaps other elements.

Even though hookworm was widespread among the children in Dr. Abbott's study, many children with no

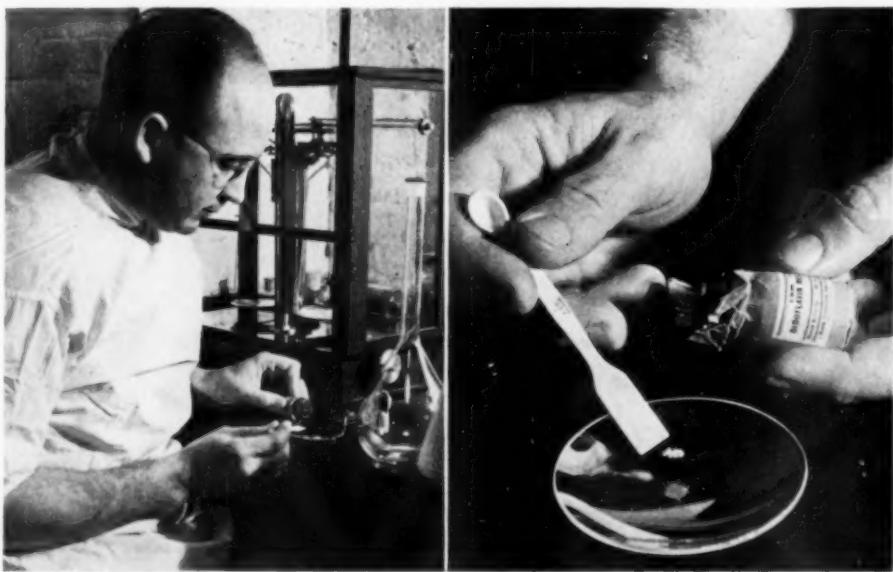
Insulin Changes Cancer Cell

SARTVATION treatment of wildly growing cancer cells that caused them to turn toward normalcy, accomplished in test tube experiments, was announced by Drs. Richard H. Steckel and John R. Murlin, University of Rochester, at the meeting of the Federation of American Societies for Experimental Biology in New Orleans.

This change from cell activity characteristic of cancer toward normal activity was made by starving the cancer of sugar through the use of insulin, the diabetes remedy.

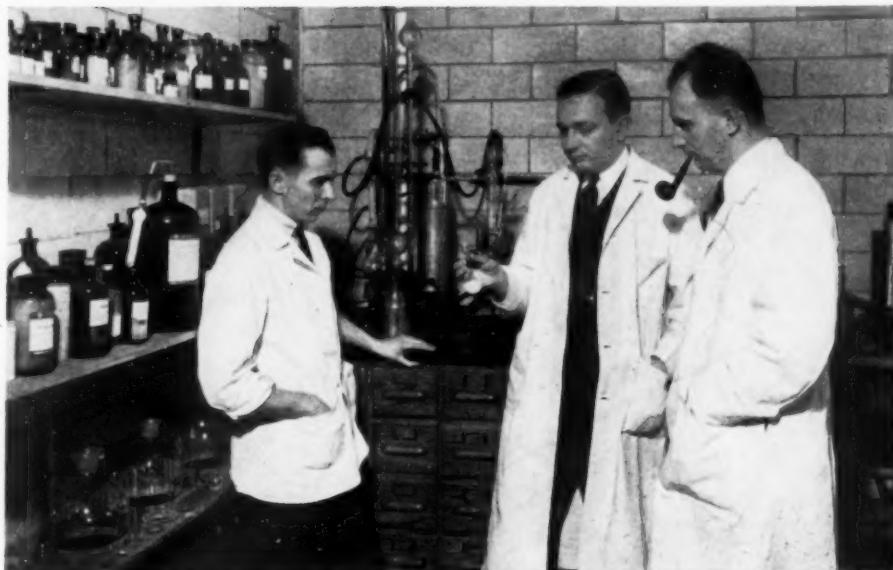
"The experiments offer no proof that insulin will cure or prevent human cancer," the Rochester scientists stated in response to inquiry.

The results, however, seem to be an



HONORED FOR RESEARCH

Dr. W. H. Sebrell, shown here in his laboratory at the National Institute of Health, shared with others the Mead, Johnson and Company's award for his discovery that riboflavin, part of vitamin B, is essential in human nutrition. At the right are Dr. Sebrell's hands and some riboflavin.

**VITAMIN SYNTHESIZERS**

Dr. E. T. Stiller (left) and Dr. J. C. Keresztesy (right), who with three other Merck and Co. researchers shared half the Mead Johnson-American Institute of Nutrition award for isolation and synthesis of vitamin B₆, are shown here with Dr. J. Finkelstein, also of Merck's, examining an intermediate product in their more recent vitamin synthesis, pantothenic acid.

important advance in the chemical attack on cancer by which scientists have long hoped to conquer this great killer of mankind. Changing the diet on which cancer thrives brought about this hopeful effect.

Slices of cancer from a rabbit were grown in blood from another rabbit that had been thrown into insulin shock by huge doses of the diabetes remedy, such as are being used in insulin shock treatment of mental disease. This blood, as a result of the insulin treatment, is deficient in sugar. Its effect in reversing the cancer toward normal was explained by the Rochester scientists in the following exclusive statement:

"Unlike normal cells, tumor cells get their energy principally from fermentation of glucose to lactic acid instead of complete oxidation of the sugar. This was shown by Prof. Otto Warburg, German Nobel laureate, and associates as early as 1923. Many attempts have been made to restore normal metabolism and thereby 'burn out' the tumor. Prof. Warburg himself and many others used insulin on tumor-bearing animals, but with no clear indication of success."

"Recently this laboratory has undertaken the use of insulin in a different way, on the hypothesis that it should discourage the tumor's growth by: First, starving it of sugar for glycolysis and, second, promoting oxidation of sugar.

The present experiments show merely that tumor slices placed in hypoglycemic (sugar deficient) serum have their oxidative metabolism markedly increased and the fermentation metabolism greatly diminished.

"Both are changes in the direction of the normal. The Brown-Pearce transplantable carcinoma of the rabbit was used and only young vigorously growing tumors chosen. Slices from the same tumor were studied simultaneously in serum from normal rabbit and from the same rabbit after being thrown into insulin shock. The effect on fermentation probably is due wholly to the lower blood (serum) sugar but the effect on oxidation may possibly be the result of a combination of factors. The experiments offer no proof that insulin will cure or prevent human cancer."

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Gallstones Due to Germs?

GERMS may play a part in the chemistry which causes formation of gallstones, experiments by Drs. K. K. Jones and Marie Lorenz, of Northwestern University Medical School, revealed. The material of which gallstones are made may be present normally in gallbladder bile, but it does not crystallize into stones unless chemical conditions are right, they found. (*Turn to page 188*)

NUTRITION**\$1000 Prize Awarded to Vitamin Researchers**

DISCOVERY that humans need the part of vitamin B called riboflavin to keep them healthy and synthesis of another B vitamin, B₆, which has also been used successfully in treatment of humans, won the Mead, Johnson and Company \$1000 award for advances in knowledge of the vitamin B complex at the meeting of the American Institute of Nutrition.

Recipients of the award are: Dr. W. H. Sebrell, National Institute of Health, U. S. Public Health Service, for the riboflavin discovery which has since led to discovery of the cause and cure of the sometimes blinding eye disease, keratitis; and, for the synthesis of B₆, a five-man research team of Merck and Company's research laboratories, Drs. John C. Keresztesy, Joseph R. Stevens, Stanton A. Harris, Eric T. Stiller and Karl Folkers.

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MEDICINE**Thiamin Vitamin Relieves Pain of Varicose Ulcers**

VITAMIN B₁ (thiamin chloride) is effective in relieving the pain of varicose ulcers, Drs. Alton Ochsner and Marvin C. Smith of New Orleans report. (*Journal, American Medical Association*, March 16.)

Ten women suffering with painful varicose ulcers were treated and all but one were definitely relieved and eight had complete subsidence of their symptoms, in an average of five days. The women varied in age from 27 to 75 years.

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Rice is now being marketed in cooked, ready-to-serve form.

If an automobile resembling 1940 models had been designed in 1900, it would have weighed three times as much as today, made of materials then available.

RADIO

Conway P. Coe, U. S. Commissioner of Patents, will announce plans for the celebration of the U. S. Patent Law Sesquicentennial, to be held in Washington, D. C., in April, as guest speaker on "Adventures in Science" with Watson Davis, director of Science Service, over the coast to coast network of the Columbia Broadcasting System, Thursday, March 28, 4:15 p.m., EST, 3:15 CST, 2:15 MST, 1:15 PST.

Listen in on your local station. Listen in each Thursday.

POPULATION

Information Gold Mine

From the Census, Economists and Other Experts Will Dig Vital Information for Business and the Sciences

By EMILY C. DAVIS

WHAT is it good for? Meaning, the huge tidal wave of census questions now sweeping the United States, as enumerators descend first on business men, then on farmers and everybody, everywhere, to gather billions of facts and figures about the state of the nation.

Ask Dr. Vergil D. Reed, young-looking and enthusiastic assistant director of the Bureau of the Census, and dull-looking statistics come alive at the snap of his fingers. You can almost see them scurrying to work—for you.

One manufacturer that Dr. Reed knows of, cherishes figures showing the number of hogs by counties in the United States? Uninspiring? The manufacturer doesn't think so. He produces lye. He knows that farmers in a good many regions use old-fashioned lye to scrape off bristles when they scald hogs. They use lye, too, in making laundry soap from pork scraps and waste fat.

The more hogs eating their heads off on those farms, the more likely the market will be good right there for selling lye, he reasons. He maps sales campaigns with census figures and county maps spread around him.

Nothing dull about hog statistics to that business man, says Dr. Reed. And all over the country are people like that lye manufacturer, who have imagination and astuteness to make the census work for them.

The business census that began January 2, will take an inventory of affairs of 1,700,000 retail dealers, 180,000 wholesalers, 50,000 theaters and places of amusement, 50,000 hotels and tourist camps, and so on, 3,000,000 concerns in all. There has been no business census since 1935, except a sampling in 1938.

Business men themselves helped frame the questions, suggesting what to put in, and while returns, of course, are confidential, published tables of facts and figures will give many a business man valuable key knowledge of business conditions in his own, and competitive, lines. The man who makes tin cans, said Dr. Reed, picking a random example, is nat-

urally interested in what the glass industry is doing.

The business census will show what war industries the United States is equipped for, and where the country is not prepared.

Even more eagerly awaited than the business census, is the housing census. Why? Because 1940 will mark the first time in United States history that the government has set out to learn exactly how its citizens are housed.

In 25,000,000 homes, in April, the enumerator will inquire: How many rooms in this house? Is it lighted by gas, by electricity? How is it heated? Does it have running water? How many residents? How old is the house? How is the mortgage, if any, held? Is there a radio? And more questions besides, but you get the idea. Millions of facts and figures about American homes—better and worse—will be garnered into the

Census Bureau offices to be sorted, tabulated and announced.

"A gold mine" is what Dr. Reed predicts the housing census will be to this country. But like the "gold in them thar hills," many nuggets in the mountain-load of housing statistics will have to be dug out. Up to this year, there has been argument aplenty among experts over the state of American housing. When the first nation-wide and comprehensive data are tabled, there will be a field day for sociologists, health and welfare officials, city governments, not to mention building contractors, plumbers, bankers, furniture dealers, lumber mills—and you can add to that list almost indefinitely. All of them will start digging to extract nuggets of fact to aid their work. How much latent purchasing power, for instance, a given community has, may be better judged from the state of its housing. That is a solid gold fact, if any business man knows one.

What has happened to the Dust Bowl is to be revealed by the 1940 census. A man from the Dust (*Turn to page 187*)



SNOW PLANE FOR CENSUS TAKING

Census enumerators in the snowy high country of Colorado are reaching isolated communities in this motor-propelled, ski-mounted snow plane, capable of speeds of 120 miles an hour over ice and able to climb 45 degree slopes. It is the invention of Howard Davis and John Price of Durango, Colo. Mr. Price is shown (at left) with Joseph H. Woods, U. S. Census Supervisor at Durango.



ON THE FARM

The census of agriculture will discover what 7,500,000 farmers are doing about their crops, what help they hire, what are their sources of income and other facts.

POPULATION

Political Attack On Census Deplored by Population Experts

University Leaders and Research Men Join To Defend 1940 Census as Best Yet Planned; Data Necessary

ATTACKS on the Census for political purposes are deplored by population experts, whose opinions on the current controversy have been asked by Science Service.

These authorities are among those who will be using the data gathered in scientific studies in order to give a better picture of the American way of life as it is currently lived.

"A complex social and economic civilization cannot be managed without many details and facts," declared Dr. Warren S. Thompson, director of the Scripps Foundation for Research in Population Problems, at Miami University, Oxford, Ohio. "It is a pity to let politics interfere with public needs. Data being asked for in Census are needed by students of population and by those interested in social service. The income data are especially useful to business. Housing data are needed for a better housing program."

Confidence that the American public

will cooperate with the Census as a "democratic, scientific undertaking," when the people clearly understand the fundamental issue at stake, was expressed by Prof. Frank Lorimer, professor of population studies of the American University, Washington, D. C. Calling the progress of the Census from 1790 onward "one of the proudest achievements of American democracy," Prof. Lorimer declared that both Census officials and social scientists cooperating with them have drafted the questions with the one idea of "securing accurate and useful information."

Prof. T. Lynn Smith of Louisiana State University replied that he opposes "the current effort to upset the long established policy of allowing Census Bureau to function without political interference." To justify the expenditure, Prof. Smith said, the questions must be determined by qualified specialists, not publicity seekers.

Praising the 1940 Population Census as the best ever offered any country in the world, Prof. Raymond Pearl of the Johns Hopkins University joined in strongly defending the Census schedule against Congressional attack.

Replying to Science Service's telegraphic request for opinion of scientists on the current Census controversy, Prof. Pearl declared:

"The information this Census will furnish is a prime and fundamental necessity for the Congress of the United States if it is to guide intelligently the destiny of the nation in the difficult times that confront us. No reactionary alterations of the Census schedule should be tolerated."

Stressing that the next administration, whether Democratic or Republican, will be left in "the fog of ignorance" without data which Congressional action may strike out of the Census, Prof. Rupert B. Vance of the University of North Carolina stated:

"One of the greatest lacks of our government is adequate figures and information on relief, unemployment and housing. This need is to be met by certain queries which the Census Bureau, free from the pressure of politicians and acting on the advice of competent social scientists, has introduced into the 1940 Census."

Serious consequences if the public is aroused to react against the Census, the largest scientific undertaking of the United States Government, are feared by Prof. William Ogburn of the University of Chicago. Once public cooperation is undermined, he foresees that census taking is liable to become more costly, less efficient, less complete, more inaccurate. If that is permitted to occur, both the business and economic life of the nation will be damaged.

Income questions are far from new in censuses of democratic nations of the world, Prof. Ogburn pointed out:

"For many years there has been a question on the income of farmers in this country, the 1940 Census merely extends the inquiry to urban wage earners. There was no protest on income questions in earlier censuses. It is a matter of politics."

"Information sought by the 1940 Census is needed by people of the United States to a greater extent than any previous Census," is the view of Frederick F. Stephan, secretary of the American Statistical Association.

Emphasizing that a democracy needs information about the economic and social status of its (*Turn to page 186*)

MEDICINE

Medical Science Goes on In War-Torn Remote China

SCIENTIFIC workers are carrying on in war-torn China under difficult and trying circumstances it is evidenced by a letter from Dr. Pei-sung Tang which his former teacher, Prof. William S. Cooper of the University of Minnesota sent to the journal *Science*. Highlights from Tsing Hua University, Kunming, Yunnan Province, remote corner of China: After the fall of Nanking, an arduous trip for 16 days on the crowded deck of an overloaded steamer on the treacherous Yangtze during the coldest part of the year plus motoring over difficult robber-infested highways to Kweiyang to help start a medical school from nothing, absolutely nothing, except a "hospital" of four beds and a group of determined men. Six months later a hospital of over 100 beds, laboratories which compare well with any school in China in equipment, most of the apparatus improvised, such as the hand-made pneumothorax machine rigged up from junk shop parts. Next a call to Tsing Hua, his alma mater, to direct exploitation of native materials for industries. Castor oil was substituted for imported mineral oil so successfully that he became known in southwest China as the "Castor Oil Man." Present problem: substitution of sumac wax for paraffin.

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POPULATION

Record-Breaking Migration Now Joined by Finns

AS re-shuffling of the world's people continues, with 400,000 Finns as the latest victims, it grows evident that this age will be remembered in history for an amazing happening: The greatest mass migrations the world has ever known are occurring in our time.

A few years ago, one geographer stated that the time when huge mass migrations of population might be expected to occur was over. The world seemed to be settling down.

Now, in China alone, the Japanese invasion is credited with driving millions of refugees westward into China's interior. Forty million Chinese have moved west since the invasion started, according to one estimate. This twentieth century Oriental migration dwarfs all giant armies and hordes of history, from Xerxes to Jenghiz Khan.

But to that unimaginable wave of

Chinese, must be added millions of Europeans left homeless or stranded by wars, called "home to the Reich," or otherwise shifted to suit Europe's leaders. Estimates of these uprooted millions vary considerably, because of difficulty of counting heads in such troubled times. Political refugees may mount to 20,000,000 before the war ends, some observers fearfully predict.

Our own country, far from war zones, is adding its bit to the shifting of masses of people, with such conditions as the evacuation of Dust Bowl areas and the much-discussed armies of wandering farm workers in the West.

Not until the world settles down again, temporarily, at least, can the full force of the migrations of the twentieth century be appraised. It will make a stirring and terrible chapter of our history.

Science News Letter, March 23, 1940

PSYCHOLOGY

Movements Like Swimming Made By Young Infants

THE old tradition that a human baby dropped into deep water will swim is justified by scientific experiment, provided the infant is young enough.

Babies a few days or weeks old were submerged in water in the test conducted by Dr. Myrtle B. McGraw, of the Normal Child Development Clinic at Babies Hospital, New York. They made rhythmical coordinated movements of both arms and legs "resembling swimming." The very young infant has a reflex which stops his breathing when he is under water.

But after a few months the story is different. The older infant placed in water struggles in disorganized fashion. He tries to turn over on his back. He cannot control his breathing.

Towards the end of the second year, the baby has still another way of responding to the new experience of deep water. Now he makes deliberate swimming movements especially with his legs.

The babies taking part in Dr. McGraw's experiment ranged in age from only eleven days to two and a half years. For comparison she also tested animals including opossum, kitten, rat, rabbit, guinea pig, and monkey. All these lower animals made the same rhythmical movements of arms and legs that are characteristic of the newborn human baby.

In this Dr. McGraw sees new evidence of the evolution of man. A complete report of her experiments was made to the *Journal of Pediatrics*.

Science News Letter, March 23, 1940



MEDICINE

More Anti-Typhus Vaccine Being Shipped to Hungary

ENOUGH vaccine to protect 5,000 persons from typhus fever will leave for Hungary, to battle the expected spring typhus epidemic, on the next boat sailing from these shores, it was learned at the National Institute of Health of the U. S. Public Health Service.

This vaccine, like 3,000 doses sent previously, was made by Dr. Herald R. Cox and E. John Bell, of the Institute's Rocky Mountain Laboratory at Hamilton, Mont., headquarters for the federal health service's fight against another deadly disease, Rocky Mountain spotted fever.

The anti-typhus vaccine was made from typhus fever virus raised on hen's eggs. It is being sent to Hungary at the request of Dr. Bela Johon, Hungary's assistant secretary of the interior.

Science News Letter, March 23, 1940

PLANT PHYSIOLOGY

Sulfur Dioxide Gas Damages Foliage

A LEAKY coil in your refrigerator may kill leaves on your yard trees and shrubbery and make a dead patch in your lawn, if the gas used in the compression system is sulfur dioxide, favored by manufacturers of certain makes of electric refrigerators.

A case of this kind that occurred is reported by Drs. Malcolm A. McKenzie and Linus H. Jones of Massachusetts State College (*Science*, March 8).

A repair man, called to take care of the leaky coil, ran a tube from it out into the open air to carry the acrid fumes of the gas out of the house. Subsequently the damage to the foliage was noticed, over an area of about 500 square feet. No permanent harm, however, was done to either grass or shrubbery by the relatively short exposure to the gas.

Sulfur dioxide gas probably causes its harmful effects by changing into sulfuric acid in the presence of water and oxygen.

Science News Letter, March 23, 1940

NE FIELDS

BIOLOGY

One-Celled Animals Mate After Nuclei Are Removed

THE LITTLE one-celled animals known as *Paramecia* or slipper-animals are able to go through their characteristic mating reactions even when their nuclei have been removed, it has been discovered by Prof. Vance Tartar and Dr. Tze-Tuan Chen, in researches conducted at both Yale University and the University of California at Los Angeles (*Science*, March 8).

Since a cell's nucleus is commonly regarded as the controlling center of its physiological activities, ability of enucleated cells to mate is almost as remarkable as a like ability on the part of higher animals with their heads cut off. These cells, it is stated in the report, can live as long as four days after the nuclei have been removed.

It is possible to remove nuclei from such small creatures by the use of a device known as a micromanipulator, which can cut away fractions of cells with exceedingly fine-tipped glass needles controlled by delicately adjusted screw-threaded mechanism. Such micro-surgery is performed while the operator watches through the powerful lenses of his microscope.

Science News Letter, March 23, 1940

AERONAUTICS

Giant Plane Heating Plant Would Warm Large House

THE HEATING plant installed on the larger airline transports for passenger comfort is big enough to heat a ten-room house, W. W. Davies of the United Air Lines Transport Corporation, told the National Aeronautic Meeting, sponsored by the Society of Automotive Engineers.

Mr. Davies' report, entitled "Passenger Comfort in Commercial Aviation", described the growth of commercial passenger-carrying by air.

The lowering of the noise level within a plane's cabin has progressed from the early days when cotton in the ears was the only protective measure to the state where passengers on sleeper planes are

now cautioned to talk quietly in order not to disturb those asleep, Mr. Davies said.

One big problem of passenger comfort, yet only partially solved, is the elimination of glare of sunlight off the wings of a transport plane. Screens that block off the glare usually cut off unobjectionable light too and there is little enough light entering through the small cabin windows as it is.

Mr. Davies said that large transports of the future may have a small grill for preparing quick dishes but that the bulk of the food served aloft would still be prepared beforehand and carried in hot or refrigerated food boxes as it is now.

As the altitude of airplane travel climbs oxygen equipment will be incorporated into aircraft construction. Several types of oxygen masks have been devised which are receiving a thorough trial. Some people nevertheless appear to have an aversion to the use of an oxygen mask, however compact and inconspicuous it may be. The real solution will come when the cruising height of planes mounts to 20,000 feet where it becomes economical and practical to seal the cabin and create a synthetic atmosphere equivalent to low flight altitudes.

Science News Letter, March 23, 1940

MEDICINE

New Chemical Checks Streptococcus Viridans

A NEW chemical agent successful in protecting mice against streptococcus viridans, a germ unconquered by the sulfanilamide remedies, was announced by Dr. O. M. Gruhzit, of Parke, Davis and Company, Detroit, at the meeting of the Federation of American Societies for Experimental Biology and Medicine in New Orleans.

The new chemical remedy is sodium paranitrobenzoate. Although not yet tried on human patients, it may find a place in the treatment of certain diseases caused by streptococcus viridans, such as ulcerative or malignant endocarditis, a form of heart disease.

Sodium paranitrobenzoate is relatively non-toxic to animals. Its therapeutic (curative) effect in mice infected with streptococcus viridans is of the same magnitude as produced by sulfanilamide in the beta hemolytic streptococcus infections. The sodium paranitrobenzoate has little or no effect in the latter type of streptococcus nor in pneumococcus infections.

Science News Letter, March 23, 1940

AERONAUTICS

Press in Airplane Plant Stretches Metal in Sheets

LATEST in aircraft manufacturing machinery is a metal stretching press in use at the Martin plant near Baltimore. For speedy forming of large, thin metal sheets used as engine cowlings and elsewhere in airplane construction, the stretching press does work formerly the job of a power hammer or a man with a hand hammer. The sheet of metal to be stretched is pressed hydraulically against the sheet from below, firmly and permanently transferring its shape to the metallic sheet.

Science News Letter, March 23, 1940

GENERAL SCIENCE

Women to Use Awards For Science Progress

SCIENTIFIC research, from handling giant cyclotrons to saving lives of newborn babies, will engage five out of eleven women scholars receiving fellowships from the American Association of University Women. The award of \$1,500 to each woman will make possible varied research projects.

Dr. Eleanor P. Cheydlie, pediatric interne at Bellevue Hospital in New York, will investigate some problem relating to death of newborn infants.

"There has been a definite reduction in the United States during the past 20 years in mortality for infants under one year of age," she stated, commenting on her proposed research. "But there has been little reduction in the mortality of infants under two weeks of age."

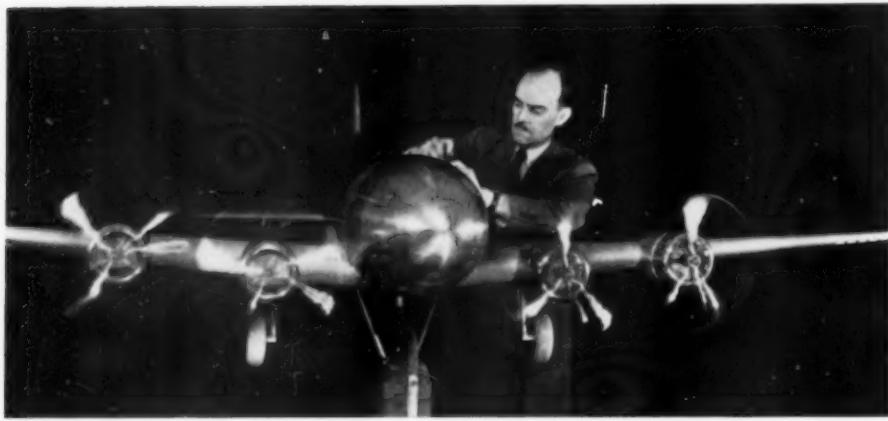
Using a cyclotron, huge laboratory machine which artificially produces radioactive elements, Dr. Herta Leng, physicist, who has come to this country from the University of Vienna, will study permeability of cells in plant and animal life. Dr. Leng will work at Purdue University, in Indiana.

Studying opossum ova, Dr. Elizabeth Lloyd White of the University of Pennsylvania will seek to learn under what conditions and for how long different stages of the mammal egg can be kept growing in the laboratory.

Endocrine glands will engage the attention of Dr. Margaret K. Deringer at the embryology laboratory of the Carnegie Institution, in Baltimore.

A teacher of chemistry at Rockford, Illinois, Dr. Donna Price will work on "the normal modes of vibration of the paraffin hydrocarbons."

Science News Letter, March 23, 1940



COMPLETE MODEL

It would delight any airplane model enthusiast to play with one of the most complete wind tunnel models of an airplane ever built—this tenth-scale edition of the four-engine 33-passenger Boeing 307 Stratoliners that will be flying soon. It has a 10-foot, 9-inch wing span and a hollow fuselage packed full of electric motors, wiring, etc., that will allow it to do almost everything except fly away. In the wind tunnel, flight is simulated by moving air.

AERONAUTICS

Airplane Gasoline Tanks Made of Synthetic Rubber

Bullet Holes or Other Punctures Easily Mended; Greater Fuel Capacity, at Less Weight, is Claim

GREATER fuel capacity for airplanes, easier repair and reduced fire hazard are among the advantages of the new synthetic rubber gasoline tanks for aircraft described at the National Aeronautic Meeting sponsored by the Society of Automotive Engineers in Washington.

The new style tanks are flexible bags of airplane cloth impregnated with the synthetic, gasoline-resisting, man-made rubber called neoprene, declared F. J. Pepersack and C. E. Roberts, engineers of the Glenn L. Martin Company, Bal-

timore, who described the aviation advance.

The fuel tank bags are contained in light-weight frames which fit into the wings, pontoons or other parts of an airplane. The bags are made slightly larger than their containers so that, when full, they will press against the supports. The weight of the gasoline is thus carried on the structure and not by the containing bags.

Based on tests and experience the new tanks—called Mareng Cells—have the following advantages, the engineers reported:

1. They eliminate corrosion from gasoline which occurs in metal fuel tanks. The neoprene rubber material is highly resistant to gasoline's action.
2. They are not affected by vibration or the sloshing of fuel within them.
3. They can be easily repaired in the field by the use of temporary patches and cement in the same way that inner tubes on automobile tires are mended.
4. They permit a greater fuel capacity to be carried in a given space, with less weight per gallon, than is possible with conventional removable metal tanks.

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WILLIAM PATON

Shell

Wyoming

5. They reduce fire hazard in a crash because they tend to reduce spillage of gasoline over wide areas. Bullets fired through the cells produce only small slits which can easily be repaired with small patches.

6. They permit easy removal and replacement because, when empty, the cell bags can be put through small openings and do not require the removal of large portions of the airplane structure as does the repair of permanent tanks built into wing structure.

7. The reduced air space above the fuel, due to the fullness of the cell, and the expelling of chlorine gas from the synthetic rubber material in event of fire, assist in extinguishing the flames.

Actual installation in airplanes shows that the rubber bag type of cell gives satisfactory performance at temperatures from 20 degrees below zero Fahrenheit to 110 degrees Fahrenheit.

Science News Letter, March 23, 1940

From Page 183

people more than any other form of government, Mr. Stephan said:

"Citizens need to know the facts about national development in order to vote intelligently on public questions."

Recalling that when President Hoover appointed commissions to study economic and social trends, these commissions reported a lack of satisfactory information on many important questions relating to American population, Mr. Stephan said that surveys in limited districts have been made since. But these, while useful, point to the need for nation-wide facts.

Information about distribution of income in various districts is needed by business concerns for the efficient marketing of their products, Mr. Stephan explained, in comment on the importance of questioning Americans about their incomes. This information is also needed by Congress, he added, for estimating the probable cost of changes proposed from time to time in Social Security legislation, and for many other uses.

Advising the American public to remember the flurry over a radio broadcast depicting an attack from Mars, Mr. Stephan predicted that many will calmly test the charges of "Census snooping" with all the facts they can find and then decide for themselves what to believe.

"Danger to our liberties in the collection of this information," he added, "is much less than the danger to our liberties from government that is based on rumors and guesses rather than facts."

Science News Letter, March 23, 1940

MEDICINE

Head Injuries at Birth Not Cause of Cerebral Palsy

Abnormality Held Due to Factors Operating During Prenatal Period or Wasting Away of Parts of Brain

A NEW and optimistic picture of head injuries at birth was presented by Dr. M. Hines Roberts, Emory University School of Medicine, at the regional meeting of the American Academy of Pediatrics in Edgewater Park, Miss.

Differing from some authorities, Dr. Roberts does not believe that cerebral palsy and similar abnormalities are due to injury of the baby's head during birth. He thinks the cause of these conditions is an abnormality in prenatal development or a wasting away of certain parts of the brain before birth. X-ray pictures of the brains of such patients show tremendous wasting or diminution in size of large areas of the brain, he said. Cerebral palsies rarely occur in Negroes, which might be explained by the fact that this race seems to possess a peculiar immunity to certain common abnormalities of development. This seems to support the view that cerebral palsies are due to developmental abnormalities and not to birth injury.

If a baby with intracranial injury at birth survives four days, his chances are good, Dr. Roberts declared. In a large group of such babies followed for from two to 15 years after birth, Dr. Roberts found that three-fourths of them had developed perfectly normally. Relatively few of the other one-fourth had true cerebral palsies.

Science News Letter, March 23, 1940

Spastic Paralysis Operations

OPERATIONS in which nerves are cut, tendons lengthened or bones cut to help children with spastic paralysis were reported by Dr. Lawson Thornton, of Atlanta. This disabling condition, in which the child lacks normal control over his muscles, is, like cerebral palsy, believed by some to be a result of injury to the brain at birth.

Besides the surgical operations, Dr. Thornton stressed the importance of training the mind and will of these children to control the misbehaving muscles.

"The muscles are spastic," he ex-

plained, "either because there is an irritating stimulus in the brain, or that part of the brain that puts on the brakes or inhibits nerve stimulation is out of commission. This disturbance of muscle control must be counterbalanced by the will power, which means concentrated thought. Concentrated thought will in time become habit. Without help, a child would make little progress alone in developing along this line, but with careful training by a conscientious, painstaking teacher or parent, he can in time accomplish much."

Science News Letter, March 23, 1940

From Page 182

Bowl region, who was a census enumerator back in 1920, wrote to Dr. Reed the other day. He said there are exactly three families actively engaged in farming in two whole counties that he could name. When census figures are in, it may be possible to rate the success of new cropping and regrassing schemes and soil conservation practice in Dust Bowl areas where the drifting soil is being stubbornly tamed again.

Over seven million people in the United States run an independent farming business, and there is a vast lot of usable information to be had by asking them about it. Who is growing what, and where? Which crops are profitable? Where are they profitable? Census figures will indicate these points.

Take flax, said Dr. Reed. There is possibility of flax coming back as a fiber. Experimentally, it is being grown in several states, including Georgia and California; and possibly it rates as a commercial crop in California. How new crops such as this are coming along will be checked up, by the census of United States farms.

"We hear a good deal about diversified farming in the South," he continued. "The census will show where gains are being made—which regions of the South now have more milk cows, more poultry, varied crops. That will interest manufacturers who make poultry supplies, and

farm tools, and other goods for which the new crops and stock—and increased income—suggest markets."

Part-time farming is an angle of American economy that Dr. Reed says is worth watching. He thinks the census may show a spread of part-time farming that is very significant.

"People started part-time farming as a depression stop-gap," he explained. "But once started, a good many suburban gardens have been kept up, and the suburban gardens ringing a city may prove to be one answer to America's question as to the future of agriculture. There has been a trend in recent years away from the farm, but part-time farming may reduce that trend."

Determined to get all possible facts about this country's food production, the Census Bureau has divided the United States into nine regions for agriculture fact-gathering. This, Dr. Reed explained, makes it possible to ask New England farmers about their own potatoes and cranberries and other products without bothering them to even look at questions on tung trees or oranges. Dividing the country nine ways, census takers plan to get specific information on such points as how Florida is doing with guavas, papayas, avocados; how the Southwest is doing with different kinds of cotton.

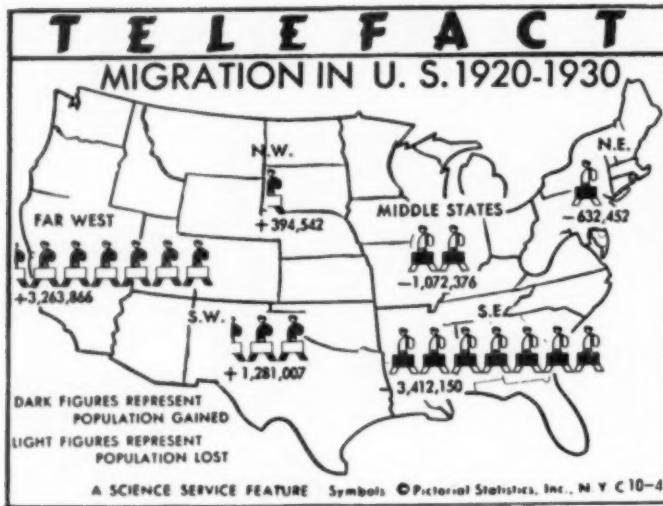
Health, as well as wealth, hinges on the census.

"Vital statistics," Dr. Reed puts it, "are like the reconnaissance wing of an army, pointing where to strike."

The tuberculosis curve, for example, has been down since 1900. Statistics have shown where the disease was most prevalent, and that helps in fighting it.

It is the cities and states, of course, that report births and deaths and causes of death to the Census Bureau. This reporting goes on regularly. But birth and disease and death trends are most significant when told in terms of rates—so many to the thousand or hundred thousand of the people. And that is where the 1940 census comes in. The new census will give the vital statisticians up-to-date figures showing, not merely the entire number of the population, but the numbers of people of different ages, in different states, in counties, and cities.

Life expectancy tables, figured from birth rates and trends, are the basis of life insurance. These figures are important, says Dr. Reed, to sixty-four million policy holders of life insurance and annuities.



Censuses have served wars, from the days when Moses counted "all that are able to go forth to war in Israel." Peaceful though the United States is, and wants to be, it is conscious of defense these days, and wants to know its man power. The census of 1940 will provide army and navy with information regarding men in different age groups; also the regions where specialized workers

are grouped. The army would have liked specific information from the population census—names and addresses of types of workers and specialists valuable in military service. But the Census Bureau clings to its policy of assuring anonymity to the public. Your census return is confidential, and even the War Department may not consult it. Only statistics are released.

Science News Letter, March 23, 1940

PUBLIC HEALTH

More Sickness Among Children Than Most Other Age Groups

THE COMPLACENCY Americans are apt to feel over the health of the nation's children, based on low child mortality rates, is dealt a severe blow by figures on child sickness which the U. S. Public Health Service has just released. (*Public Health Reports*, Jan. 26.)

Children under 10 years of age get sick oftener than any other group in the population than the aged, it is shown

by these figures, compiled by Miss Dorothy F. Holland, one of the federal health service statisticians.

The figures refer to frequency of illness lasting for one week or more as found in a survey of 500,000 children in 83 cities of varying sizes in 18 states during one year. The very highest frequency rate for disabling sickness among white children was found at the ages five to nine years. This rate was 305 per 1,000. For Negro children the highest disabling illness rate occurs in the ages under five years.

Acute communicable diseases of childhood and the respiratory diseases caused eight out of ten disabling illnesses among children under 15 years of age. Among these eight cases, five were acute communicable diseases of childhood and three were cases of acute respiratory diseases. Measles showed a higher frequency than any of the other childhood diseases, though the marked excess of measles shown in the survey reflects the unusually high incidence of measles during the

survey year (1935). Mumps, whooping cough and chicken pox also were frequent causes of disabling illness. Among the respiratory diseases, tonsillitis, influenza, colds, pneumonia and bronchitis led in frequency.

Infantile paralysis caused 56% of all orthopedic impairments due to disease among children under 15 years.

Science News Letter, March 23, 1940

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Specifically, fatty acids with long side-chains must be converted by oxygen to acids with short side-chains. If the flow of bile is stopped fermentations from bacteria or from white blood cells may provide the oxygen for changing the long fatty acids into short ones with consequent formation of the stones.

Science News Letter, March 23, 1940

Danger in Benzedrine

FOR reviving those who have passed out after imbibing moderate amounts of alcohol, benzedrine is effective and relatively safe. But this wake-up drug may be dangerous when more than moderate amounts of alcohol have been taken.

This is the conclusion that may be drawn from experiments on rabbits reported in New Orleans to the Federation of American Societies for Experimental Biology by Dr. E. C. Reifenstein, Jr., of Syracuse (N. Y.) University.

Benzedrine (technically, amphetamine sulphate) has been known previously to be useful for sobering-up. It is used also in preparations for relieving stuffy noses. And recently it was reported useful for treating nervous patients and even problem children.

Dr. Reifenstein's rabbit experiments show that the drug has no restorative effect after lethal amounts of alcohol and even increases the toxicity of near lethal quantities of alcohol.

Alcohol, in rabbits at least, counters the effects of amphetamine, protect-

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ing the animal against lethal doses of the drug. This finding may prove valuable in cases of nervous and emotional disturbances, such as the sleep disorder, narcolepsy, for which amphetamine is proving a valuable remedy. If patients under this treatment should get an overdose of amphetamine, the antidote, apparently, would be a cocktail.

Science News Letter, March 23, 1940

Young Girl "Guinea Pigs"

FOUR physically healthy American young women were given the first stages of the Oriental deficiency disease, beriberi, in diet experiments reported by Drs. R. D. Williams, H. L. Mason and R. M. Wilder, of the Mayo Foundation, at the meeting of the American Institute of Nutrition in New Orleans.

They were given the disease by a diet almost completely lacking in vitamin B₁, or thiamin. Polished rice, sugar, tapioca, white bread, cornstarch, white raisins, egg white, cottage cheese and American cream cheese, butter, black tea and cocoa were the foods they ate for 21 weeks.

Mental depression, lack of appetite, digestive disturbances, disturbed heart action, and occasional tenderness of the muscles of the calves of the legs were the symptoms they suffered on this diet. All the symptoms disappeared promptly when the young women were given thiamin or vitamin B₁. Within a few hours they felt better and were hungry for food that had previously been nauseating.

The severe neuritis and swelling characteristic of beriberi did not afflict these young women. This led one doctor to comment that if the young women while on the diet had gone to a doctor who did not know about the diet, their symptoms would have been diagnosed as neurasthenia or chronic nervous exhaustion. Many patients, it was suggested, may be suffering from lack of this vitamin.

A patient suffering from what used to be called alcoholic insanity was also put on the diet the young women ate. His mental symptoms were all made worse, but, like the young women, he improved when vitamin B₁ was given to him. This condition, it is now known, is due to lack of the vitamin rather than to the alcohol.

Science News Letter, March 23, 1940

New Vitamin B

A NEW vitamin, member of the large family of B vitamins but one whose existence has never before been suspected, was presented to the Institute

by Drs. A. G. Hogan, L. R. Richardson and Homer Patrick, of the University of Missouri.

This vitamin, which has not yet been identified, is provisionally labeled vitamin Bp. It is concerned with the development and shape of bones. Without this vitamin in their diet, the bones of chicks are shorter and thicker than normal, and the chicks develop the disease known as slipped tendon or perosis.

Existence of the vitamin has been so recently discovered that its exact significance, other than for prevention of perosis in chicks, is still a matter of speculation, the Missouri scientists stated.

"Our first thought is," they said, "since it is concerned with the bone development and conformation of the chick, it may also be concerned with the structural development of other animals, and of man himself."

Science News Letter, March 23, 1940

Pantothenic Acid

DISEASES of poor diet for which no vitamin cure has yet been discovered may be conquered by pantothenic acid, the vitamin believed essential for all life throughout the universe and the latest of the vitamins to be synthesized in the chemical laboratory.

This vitamin may even have a role in speeding recovery of patients whose vitamin stores have been depleted by serious germ diseases.

This speculative picture of the future usefulness of this vitamin, was presented by its discoverer, Prof. R. J. Williams, of the University of Texas, to the American Institute of Nutrition at New Orleans. Human beings very probably require this vitamin and its importance for nutrition of chicks and rats has already been demonstrated.

"People who are on a diet deficient in other B vitamins are liable to be deficient in pantothenic acid also," declared Prof. Williams. "While nicotinic acid is effective in pellagra, there are other conditions associated with pellagra which nicotinic acid will not cure but which are greatly benefited, for example, by vitamin B₁. It may be that pantothenic acid will be effective in similar cases."

"Individual human beings, unlike inbred strains of rats, probably do not all have the same requirements and it is probable that a given bacterial disease may alter one's requirement afterward."

No one can tell what a vitamin may be good for, Prof. Williams continued, pointing to the recent discovery that the anti-sterility vitamin E is effective in treating diseases of muscular weakness.

"The future of pantothenic acid in human nutrition and therapy is largely conjecture," he said.

Such conjectures are rife since announcement of the synthesis of the vitamin, which means a plentiful supply will be available for clinical and other experiments.

"Foods which are rich in other B vitamins, such as yeast, liver, eggs and milk, are relatively rich in pantothenic acid also," Prof. Williams said.

Science News Letter, March 23, 1940

Swimmer's Death

OCCASIONAL sudden death of a good swimmer upon plunging into cold water apparently is due to the effect of the cold water on the body's production of a chemical substance whose action resembles that of histamine. Tests made on five healthy swimmers by Dr. Grace M. Roth, section on clinical physiology of the Mayo Clinic, and Milton A. Gabrielson, M.S., Special Research Fellow of the Mayo Foundation, furnished this explanation of such deaths.

Swimming in cold water between 65 and 85 degrees Fahrenheit increases stomach acidity, these investigators discovered. This finding would doubtless be enough warning to keep many persons out of cold water. The finding, however, fits with previous Mayo Clinic discoveries about persons who are allergic or hypersensitive to cold. Such persons might die from the sudden plunge into

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the chilly waters of a mountain lake. The latest findings, made on normal persons, indicate the dangers even when there is no allergy or hypersensitivity to cold, and explain the mechanism of the sudden deaths, linking it with the chemical, histamine.

When an enzyme that inactivates histamine is taken into the digestive system half an hour before immersion in cold water, the increase in stomach acidity is prevented. This shows that the sudden increase of histamine-like substances due to immersion in cold water is what causes the trouble. Histamine dilates the small blood vessels and lowers the blood pressure dangerously. The shock of this sudden lowering of blood pressure may prove fatal.

Science News Letter, March 23, 1940

Arthritis Problem

ATTACK on the arthritis problem by experiments with mice and a new, unusual type of germ which gives the mice symptoms typical of human arthritis has progressed to the development of a vaccine that protects the mice against this experimental arthritis. Results of the vaccination experiments were reported by Drs. Albert B. Sabin, now of the University of Cincinnati College of Medicine and formerly of the Rockefeller Institute, and Dr. Isabel M. Morgan, of the Rockefeller Institute.

"I can see no present or future application of these experiments to human arthritis," Dr. Sabin replied to a question on this point.

Because the germ, a pleuropneumonia organism, belongs neither to the bacteria group nor the virus group of disease-causing microorganisms, Dr. Sabin's studies of it are interesting to scientists who want to know all about the strange new germ which, even if it may never affect humans, causes disease in the laboratory mice used for many studies.

Science News Letter, March 23, 1940

Noises Hurt

HIGH-PITCHED noises have a greater depressing effect than lower-pitched ones of the same degree of loudness, Drs. Edward J. Van Liere, Paul E. Vaughan and Davis W. Northup, West Virginia University School of Medicine, announced.

At a high pitch, a noise about as loud as a riveter slows down secretion of digestive juices and acid in the stomach more than the same noise at a low pitch, it was learned from studying the effects of noise on dogs' digestion. The same studies showed that variation between individuals is important, some being able to stand noise better.

Science News Letter, March 23, 1940

ENGINEERING

New Fluorescent Lamps Must Have "Aging" Test

See Front Cover

RACKS upon racks of luscious-colored fluorescent lamps are being constantly filled, tested and emptied at the General Electric Fluorescent Lamp Works at Nela Park. Twelve thousand lamps a day pass through this "aging" test, which is pictured on the front cover of this week's SCIENCE NEWS LETTER.

Girls run an induction coil, and sometimes their hands, up and down the lamps to light them as if by magic.

Foreign gasses in the lamps are thus cleaned up and the lamps leveled off so that when sold they will start normally.

Science News Letter, March 23, 1940

If an ostrich should bury its head in the sand, it would suffocate.

Teaching handicapped *shut-in* children via a telephone hookup from classroom to homes is being tried in Waterloo, Iowa.

HORTICULTURE

NATURE RAMBLINGS by Frank Thone



Multiple Cropping

MULTIPLE cropping, or the growing of two or more kinds of vegetables or flowers in the same tank of water containing nutrient chemicals, is the newest development in hydroponics, or "dirtless farming" as it has been nicknamed. Possibilities of multiple cropping are explained by the originator of hydroponics, Dr. William F. Gericke, of Berkeley, Calif., in his new book, *Soilless Gardening*.

Dr. Gericke states that he has successfully grown such combinations as corn and potatoes; potatoes, tomatoes and celery; and daffodils, godetias, gladioli and chrysanthemums simultaneously in the same hydroponic basins. The different plants kept out of each other's way through differences in height, sequence in harvesting times, etc. Sometimes a little human aid was called in, as in pruning the tomato vines so that they would bear their fruit above the level of the potato leaves.

In one experimental planting of potatoes and corn, in a basin with a surface area of $1/220$ of an acre, the harvest was 6.8 bushels of potatoes and 1.11 bushels of corn, which is equivalent to 1496 bushels of potatoes and 244.2 bushels of corn from the same acre.

The hydroponic technique, as developed by Dr. Gericke, is an adaptation to large-scale, commercial production of the solution-culture method used for a century or more in plant physiology laboratories for purely experimental purposes. In it, plants are held suspended in sawdust, excelsior or other non-soil material on wire netting, with their roots dangling in tanks or basins filled with water. In the water are dissolved the same mineral nutrients that plants get from common soil fertilizers, though the combi-

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nations and properties may differ because of the radically different environmental conditions to which the plants are subjected.

While it is possible for the amateur gardener to have a lot of fun with hydroponics if he does not stop to bother about the costs, Dr. Gericke emphasizes that using the system for profit-making purposes is a task for scientific knowledge and practical horticultural experience. He is convinced that hydroponics is destined to play an important part in the

food and flower production of the future, but he feels no less strongly that the important advances will be made by men and women who bring with them not only enthusiasm for a new thing but also hard work and patiently acquired skill.

The name, hydroponics, is a word of Dr. Gericke's own coinage. It is formed by analogy with a Greek word, geponics, meaning earth-working — that is, agriculture. Hydroponics is the liquid analogue of agriculture.

Science News Letter, March 23, 1940

CHEMISTRY

Japanese Make Synthetic Fiber From Soya Bean

Yarns Finished to Resemble Either Silk or Wool; Lecithin Used to Prevent Premature Hardening

OUT of the protein in soya beans two Japanese chemists have developed a strong synthetic fiber of high tensile strength which can resemble wool or natural silk, depending on production methods. The process is described in a new patent, No. 2,192,194, just granted by the U. S. Patent Office, to Toshiji Kajita and Ryohei Inoue of Tokyo.

Scientists of the U. S. Department of Agriculture express little surprise that a wool-like fiber can be created from soya beans, for it has been done experimentally, also, in the United States. The claims of a silk-like fiber are novel. While samples of the new Japanese fiber are not available, it is believed that this claim relates to the appearance of one form of the fiber which might be straight without the kink of wool, and which might possess a sheen resembling that of silk.

Chemists, too, are interested in the new patent because it describes the use of the chemical, lecithin, to stabilize the protein solution prior to its ejection into a hardening bath. American investigators have found that with soya bean protein solutions a critical stage is reached where pectin is present. Pectin is often used by cooks to make jelly. If the pectin in the solution makes it gel prematurely the whole batch must be thrown out. If the Japanese can prevent this gelation with lecithin they have made a real advance in the synthetic fiber art.

Italy was the original home of wool-like fibers made from protein and Italian

scientists introduced and perfected Lanital—made from milk. The protein of the casein in milk is the basic starting point for this product.

It has been pointed out many times that the protein of soya beans, or fish, or other sources might also be used for fibers and world-wide research has progressed rapidly to perfect these other possibilities.

In the Orient, where soya beans form such an inexpensive, widely-produced and used commodity, the perfection of methods of making fibers from the protein in the bean represents the East's answer to the West.

Science News Letter, March 23, 1940

GEOLOGY

Giant Artesian Springs Caused Carolina "Bays"

REAT, bubbling prehistoric artesian springs and not a spectacular shower of giant meteorites from outer space are the most probable cause of the mystery "bays," or craters, of the central Carolinas, Prof. Douglas Johnson, geologist of Columbia University, told the Sigma Xi chapter of Denison University.

Prof. Johnson told how his continued research and analysis has led him to revise the older theory that a shower of giant meteorites made the craters. He used the Carolina "bays" and their study as an object lesson in scientific research and its methods.

The great artesian springs, some of which on a small scale still remain in the region, may offer a better explanation of the formation of the craters than does the hypothesis of meteorite showers, but Prof. Johnson still does not regard his own theory as perfect.

"I fully realize that some other hypothesis, perhaps one that wholly escaped my search, may prove the key which will solve the mystery of the Carolina craters," Prof. Johnson said.

Admitting that his theory of artesian springs as the cause of the craters is more intricate and complicated than the earlier theory of giant meteorites, Prof. Johnson concluded:

"We can draw some worth-while lessons from our study. One is that the simplicity of an explanation is no guarantee of its validity. The human mind prefers simple explanations of natural phenomena. Yet it remains true that Nature often moves in complex as well as in mysterious ways her wonders to perform."

Science News Letter, March 23, 1940

China's National Geological Survey will shortly issue a report on China's fossil plant life of 25,000,000 years ago, thus continuing non-military scientific work despite war conditions.

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ECONOMICS—AGRICULTURE

COMPETITION AMONG GRAINS — N. Jasny—*Food Research Inst., Stanford Univ.*, 606 p., \$4. If you eat black bread you don't eat white. If you feed your horse on cracked corn you give him less oats. What these homely, everyday experiences mean when magnified into terms of world economics is systematically attacked in this, the first comprehensive study of inter-commodity competition among maize, wheat, rye, barley and oats.

Science News Letter, March 23, 1940

HORTICULTURE

THE COMPLETE GUIDE TO SOILLESS GARDENING—William F. Gericke—*Prentice-Hall*, 285 p., illus., \$2.75. See page 190.

Science News Letter, March 23, 1940

PHYSIOLOGY

MINERAL METABOLISM—Alfred T. Shohl—*Reinhold*, 384 p., \$5. Present knowledge of mineral requirements and utilization in the body is given for the general scientist who may not have been able to keep abreast of the rapid developments in this special field. Too technical for the lay reader unless he has a good knowledge of chemistry, physical chemistry and biology.

Science News Letter, March 23, 1940

ANTHROPOLOGY

CULTURAL AND NATURAL AREAS OF NATIVE NORTH AMERICA—A. L. Kroeber—*Univ. of Calif. Press*, 242 p., cloth, \$3.50; paper, \$3.00. Investigators no longer seek to explain culture as the product of an environment, but Dr. Kroeber finds that the pendulum has swung so far that environment is too much neglected. Hence this study, which deals in "culture wholes," rather than details, and inquires into the historic relations of the geographic units of cultures.

Science News Letter, March 23, 1940

AERONAUTICS

AIRCRAFT DESIGN: Vol. I, Aerodynamics, 215 p., \$6; Vol. II, Aerostructures, 308 p., \$6.50.—C. H. Latimer Needham—*Chemical Pub. Co.* Here is a two-volume British text which is complete and authoritative and as up-to-date as any book could be in a field moving so rapidly as that of aircraft design, which changes—as the jokes and cartoons would have it—so swiftly that new military models are obsolete before they

are flight tested. Much of the material is, however, standard textbook background, invaluable for anyone approaching aviation in a serious way.

Science News Letter, March 23, 1940

ORNITHOLOGY

NATURAL HISTORY OF THE BIRDS OF EASTERN AND CENTRAL NORTH AMERICA—Edward Howe Forbush; John Bichard May, rev.—*Houghton Mifflin*, 553 p., 97 pl., \$4.95. Forbush's notable three-volume work has long been out of print, much to the regret of ornithologists. This one-volume condensation and revision, with the number of color plates actually augmented, will therefore fill a long-felt need, and will doubtless appeal to an even wider bird-loving public than the bulkier original.

Science News Letter, March 23, 1940

TECHNOLOGY

EVALUATION OF PETROLEUM PRODUCTS, A Résumé of Present Information—*American Society for Testing Materials*, 52 p., 75c.

Science News Letter, March 23, 1940

ECONOMICS

AMERICAN PLANNING AND CIVIC ANNUAL—Harlean James, ed.—*American Planning and Civic Assoc.*, 288 p., \$3. Making available papers delivered at conferences during 1939, there are covered such subjects as: housing, recreation, man-made obstacles to planning, rural problems, national income, planning in business and social activities, public works, state parks, national parks.

Science News Letter, March 23, 1940

GENERAL SCIENCE

THE ADVANCEMENT OF SCIENCE, No. 2, January 1940—*British Association for the Advancement of Science, London*, 236 p., 5 s. Many papers and addresses intended for delivery at the Dundee meeting, interrupted by the coming of war, are included in this volume.

Science News Letter, March 23, 1940

ALMANACS

THE 1940 NATIONAL CATHOLIC ALMANAC—Franciscan Clerics of Holy Name College—*St. Anthony's Guild, Franciscan Monastery, Paterson, N. J.*, 759 p., paper, 75c.; cloth, \$1.50. Containing as it does information not readily available elsewhere, this annual is worth having on any reference shelf. There is a short section on science.

Science News Letter, March 23, 1940

PHOTOGRAPHY

GRAPHIC GRAFLEX PHOTOGRAPHY—Willard D. Morgan, Henry M. Lester and others—*Morgan & Lester*, 403 p., \$4. The many owners of Graphic or Grafex cameras will welcome this encyclopedic work from the pens and lenses of some 20 experts in varying fields of photography. The lavish illustrations demonstrate clearly what very beautiful work can be done by these cameras, favorites of the news photographer.

Science News Letter, March 23, 1940

PHOTOGRAPHY

PHOTOPEDIA, Official Master Equipment and Materials Guide of the Photographic Industry—*United Catalog Publishers*, \$1.95. An important book for photographic dealers or others who do much buying or selling in this field; it is also a delight to the camera fan who loves to eye longingly a display of all the new gadgets and paraphernalia of his hobby.

Science News Letter, March 23, 1940

CHEMISTRY

VEGETABLE DYES—Ethel M. Mairet—*Chemical Pub. Co.*, 68 p., \$2. A book of recipes and other information for the dyer who works with nature's own materials that have been used, in many cases, from prehistoric times.

Science News Letter, March 23, 1940

ENGINEERING

ENGINEERS AND ENGINEERING IN THE RENAISSANCE—William Barclay Parsons—*Williams & Wilkins*, 661 p., \$8. A distinguished engineer erects a new and lasting monument to the renaissance period in this splendid book discussing the amazing engineering achievements of that era. Here is a classic in its field.

Science News Letter, March 23, 1940

ORNITHOLOGY—BIBLIOGRAPHY

A BIBLIOGRAPHY OF BIRDS: Author Catalogue—Reuben Myron Strong—*Field Museum of Natural History*, 937 p., Part 1, A to J, \$6; Part 2, K to Z, \$6. Ornithologists everywhere will be grateful to the author for undertaking this herculean labor, which will spare uncountable hours of library-grubbing to thousands of his colleagues. Primary attention is paid to non-taxonomic literature, and comprehensive search was stopped as of 1926, partly because *Biological Abstracts* began in that year.

Science News Letter, March 23, 1940